

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and the following remarks.

I. Status of the Claims

Claims 1-22 and 33-35 are currently pending in the application, with claims 1 and 10 being the independent claims. Claims 23-32 are cancelled without prejudice to or disclaimer of the subject matter therein. Claims 1, 10 and 20-22 are amended.

Claims 1, 10 and 20-22 are amended to specify that the distal end of the hollow pin is offset from the animal cell colony by an offset distance, such that the distal end of the hollow pin is not in contact with the animal cell colony. Support for the amendment to claims 1, 10 and 20-22 may be found throughout the specification, and in particular in Figures 7, 8A and 8B and at page 4 of the published patent application, paragraphs [0052] and [0055].

These amendments do not introduce any new matter into the application and their entry is respectfully requested.

II. The Telephone Interview with the Examiner

Applicants wish to thank Examiner Nathan Andrew Bowers for the courtesy extended to Applicants' representative during the telephone interview held on October 31, 2007.

III. The Rejection Under 35 U.S.C. § 102

The Office Action, at pages 2-3, rejects claims 1, 2, 5, 6, 10, 18, 19, 21 and 22 under 35 U.S.C. § 102(e) as being allegedly anticipated by US Patent Application Publication No. 2003/0179916 A1 to Magnuson *et al.* ("Magnuson"). Applicants respectfully traverse this ground of rejection.

1. Summary of the Claimed Invention

The presently claimed invention is directed to a method for automated picking of animal cell colonies. The method employs a picking head comprising at least one hollow pin to pick the colonies. The method comprises moving at least one hollow pin to a colony picking position in which a distal end of the hollow pin is immersed in the medium and offset from *the animal cell colony by an offset distance, such that the distal end of the hollow pin is not in contact with the animal cell colony* and aspirating the animal cell colony into the hollow pin *while the distal end of the hollow pin is held in the colony picking position.*

Further, the invention is directed to an apparatus for picking animal cell colonies comprising a camera for capturing images, a computer comprising an image processing software for identifying the location of the colonies and a control software for controlling the picking of the colonies by interacting with the image processing software, and a picking head comprising at least one hollow pin connected to a drive that introduces a distal end of the hollow pin into the sample container *offset from the animal cell colony, such that the animal cell colonies are picked from the medium by the hollow pin at an offset distance.* The control software of the computer controls the apparatus for colony picking by: (i) capturing an image of the animal cell colony with the camera; (ii) performing image analysis with the image processing software to detect animal cell colonies, thus creating a list of target colonies; and (iii) assigning the apparatus to collect the target colonies with the control software. The target colonies are picked by repeatedly performing the following actions specified by the control software: (a) moving at least one hollow pin to an animal cell colony location in the pick list; (b) moving the hollow pin to a *colony picking position in which a distal end of the hollow pin is immersed in the medium and offset from the animal cell colony by an offset distance, such that the distal end of the hollow pin is not in contact with the animal cell colony,* and (c) aspirating the animal cell colony into the hollow pin *while the distal end of the hollow pin is held in colony picking position.*

The invention is also directed to methods of using the apparatus for identifying and picking animal cell colonies.

The claimed methods and apparatus are specifically designed to pick animal cell colonies *while the distal end of the hollow pin is held in a picking position at an offset distance from the animal cell colonies during the picking procedure*, such that **no contact** is created between the picking pin and the cell colony. As demonstrated at the personal interview with the Examiner held on October 12, 2006, contact of the pin with the colony results in its destruction. The present invention provides methods and apparatus that allow the picking of animal cell colonies without causing destruction of the colonies being picked and displacement of surrounding cell colonies from their position.

The claims, as amended, find clear support in the specification. Thus, Figure 7 in the application shows the pin moved to a position for picking an adherent cell colony. The pin is lowered so that the distal end of the outer pin is immersed in the liquid and offset by a small amount 'd2' from the animal cell colonies. Figure 8A shows the pin over an adherent target colony immersed in liquid and Figure 8B shows the pin tip immersed directly over the colony and at an offset distance from the colony, ready for the picking process.

2. The Cited Reference Fails to Teach Each and Every Element of the Claimed Invention

The Office Action states that Magnuson teaches that the hollow pin is aligned with the animal cell colony locations and that a distal end of the hollow pin is introduced into the cell medium proximate to the animal cell colony by an offset distance.

From these teachings, the Office Action then infers that, since the tip is only lowered to the colony, and since the colony must have a finite vertical extent above the base, Magnuson discloses lowering the end of the tip to a distance that is offset from the base of the container. The Office Action then concludes that Magnuson discloses a picking method that involves an offset between the end of the tip and the container base.

Solely to advance prosecution, and not in acquiescence with the rejection, Applicants have amended the claims to specify that the distal end of the hollow pin is offset from the animal cell colony by an offset distance, such that the distal end of the hollow pin is not in contact with the animal cell colony.

As recognized by the Office Action (*see* Office Action, at page 11), Magnuson requires that there be contact with the cells. In fact, Magnuson repeatedly states that in order to aspirate an adherent colony, the tip must either scrape the colony off the base prior to aspiration (*see* tip design as shown in Figure 3), or the tip must be sealed over the colony such that it can create a vacuum allowing the aspiration, i.e. sucking (*see* tip design as shown in Figure 4).

Specifically, Magnuson teaches that a tip can be designed for removal via aspiration techniques, such that it can form an essentially airtight seal with the colony or cell, or the tip can be designed for removal via a physical scraping motion, with a suitable scraping surface adapted to scrape a colony from the growth substrate (*see* paragraph [0127] at page 11 of Magnuson). These teachings may be additionally found throughout the specification in Magnuson (*see* paragraphs [0011], [0024], [0056], [0067], [0124-0127], [0160], [0169-0172], [0212]).

In summary, Magnuson fails to disclose or suggest a method and an apparatus for picking animal cell colonies, where animal cell colonies are picked and aspirated into the hollow pin *while the hollow pin is held in a colony picking position in which a distal end of the hollow pin is immersed in the medium and is at an offset distance from the animal cell colony, such that the distal end of the hollow pin is not in contact with the animal cell colony* during the entire picking procedure. Quite to the contrary, Magnuson teaches away from the claimed invention by requiring contact between the pin and the cell colony and failing to recognize that contact between the picking pin and the animal cell colony disrupts the cell colony and displaces surrounding colonies.

Thus, Magnuson fails to anticipate the claimed invention. Accordingly, Applicants respectfully request reconsideration and withdrawal of this ground of rejection.

IV. The Rejections Under 35 U.S.C. § 103

A. The Rejection Over Magnuson in view of Elverd

The Office Action, at pages 3-5, rejects claims 3, 13 and 33 under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent Application Publication No. 2003/0179916 A1 (“Magnuson”) in view of U.K. Patent Application No. 2310006 A (“Elverd”). Applicants respectfully traverse this ground of rejection.

The inability of Magnuson to teach or suggest the invention of claims 1-2, 5-6, 10, 18-19 and 21-22 is demonstrated above. The additional reference, Elverd, does not remedy the deficiencies of Magnuson. Rather, Elverd discloses a pneumatic actuator comprising an array of pistons that fire and retract individual pins that can collect and transfer biological samples. Thus, Elverd, like Magnuson, fails to disclose or suggest a method and an apparatus for picking animal cell colonies, where the colonies are picked and aspirated into the hollow pin while the hollow pin is held at an offset distance from the animal cell colonies.

Accordingly, the rejection is improper. Therefore, Applicants respectfully request reconsideration and withdrawal of this ground of rejection.

B. The Rejection Over Magnuson in view of Sogi

The Office Action, at pages 5-6, rejects claims 4, 11-12 and 34-35 under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent Application Publication No. 2003/0179916 A1 (“Magnuson”) in view of U.S. Patent No. 4,210,724 (“Sogi”). Applicants respectfully traverse this ground of rejection.

The deficiencies of Magnuson in teaching or suggesting the claimed invention are demonstrated above. The additional reference, Sogi, does not remedy the deficiencies of Magnuson. Rather, Sogi is directed to an apparatus for liquid disposal and distribution for use in an automatic culture and fails to disclose or suggest a method and an apparatus for picking

animal cell colonies, where the colonies are picked and aspirated into the hollow pin while the hollow pin is held at an offset distance from the animal cell colonies.

Accordingly, the rejection is improper and its withdrawal is respectfully requested.

C. The Rejection Over Magnuson in view of Pareck

The Office Action, at pages 7-10, rejects claims 4, 7-9, 14-17, 20 and 27-28 under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent Application Publication No. 2003/0179916 A1 (“Magnuson”) in view of U.S. Patent No. 6,064,754 (“Pareck”). Applicants respectfully traverse this ground of rejection.

The inability of Magnuson in teaching or suggesting the claimed invention is demonstrated above. The additional reference, Pareck, does not remedy the deficiencies of Magnuson. Rather, Pareck is drawn to computer-assisted methods and apparatus for identifying, selecting and characterizing biomolecules in a biological sample. The reference fails to teach or suggest the non-contact picking method and apparatus claimed in the present application. Accordingly, Applicants respectfully request reconsideration and withdrawal of this ground of rejection.

D. The Rejection Over Magnuson

The Office Action, at page 11, rejects claims 23-26 and 29-32 under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent Application Publication No. 2003/0179916 A1 (“Magnuson”). Applicants respectfully traverse this ground of rejection.

As the foregoing amendment cancel claims 23-32, this rejection is now moot. Reconsideration and withdrawal of this ground of rejection are therefore respectfully requested.

CONCLUSION

All of the stated grounds of rejections have been properly traversed or rendered moot. Therefore, the present application is now in condition for allowance, and an early notice to that effect is earnestly solicited.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. § 1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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